Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

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Listing of Claims:

1. (Currently Amended) A color quantization method based on the HMMD color space, comprising:

dividing the color space into a plurality of ~~differential values corresponding to~~ diff regions along ~~the~~ a diff axis; and

uniformly quantizing each diff regions along a sum axis and a hue axis.

2. (Previously Presented) A color quantization method based on the HMMD color space, comprising:

dividing the color space into a plurality of differential values (diff) regions along the diff axis;

dividing a lowest diff region of the color space into N equal parts along the sum axis; and

dividing the rest of the diff regions along the sum axis and the hue axis.

3. (Original) The method of claim 1, wherein a longer sum width (a) is selected from both end sum widths (a,b) to be used when partial parts divided by the determined diff values are divided into equal parts by respective given constants based on the sum axis.

4. (Previously Presented) The method of claim 1, wherein the HMMD color space is divided into M equal parts along the hue axis.

5. (Previously Presented) The method of claim 1, wherein the diff regions are divided into 2^x (x is either zero or a positive number) equal parts along the sum axis and each of the equal parts divided along the sum axis is divided into 2^y (y is either zero or a positive number) equal parts along the hue axis.

6. (Previously Presented) The method of claim 1, wherein the diff values range from 0 to 255, and diff values 6, 20, 60, and 110 are preselected to divide the color space along the diff axis, such that the color space is divided into 5 diff regions based on the preselected diff values, wherein the color space is divided into 256 spatial regions by:

dividing the lowest or first diff region into 32 equal parts along the sum axis so as to provide 32 spatial regions;

dividing the second diff region into 8 equal parts along the sum axis and again into 4 equal parts along the hue axis so as to provide 32 spatial regions;

dividing the third diff region into 4 equal parts along the sum axis and again into 16 equal parts along the hue axis so as to provide 64 spatial regions;

dividing the fourth diff region into 4 equal parts along the sum axis and again into 16 equal parts along the hue axis so as to provide 64 spatial regions; and

dividing the fifth diff region into 4 equal parts along the sum axis and again into 16 equal parts along the hue axis so as to provide 64 spatial regions.

7. (Previously Presented) The method of claim 1, wherein the diff values range from 0 to 255, and diff values 6, 20, 60, and 110 are preselected to divide the color space along the diff axis such that the color space is divided into 5 regions based on the preselected diff values, wherein the color space is divided into 128 spatial regions by:

dividing the lowest or first diff region into 16 equal parts along the sum axis so as to provide 16 spatial regions;

dividing the second diff region into 4 equal parts along the sum axis and again into 4 equal parts along the hue axis so as to provide 16 spatial regions;

dividing the third diff region into 4 equal parts along the sum axis and again into 8 equal parts along the hue axis so as to provide 32 spatial regions;

dividing the fourth diff region into 4 equal parts along the sum axis and again into 8 equal parts along the hue axis so as to provide 32 spatial regions; and

dividing the fifth diff region into 4 equal parts along the sum axis and again into 8 equal parts along the hue axis so as to provide 32 spatial regions.

8. (Previously Presented) The method of claim 1, wherein the diff values range from 0 to 255, and diff values 6, 20, 60, and 110 are preselected to divide the color space along the diff axis such that the color space is divided into 5 diff regions based on the preselected diff values, wherein the color space is divided into 64 spatial regions by:

dividing the lowest or first diff region into 8 equal parts along the sum axis so as to provide 8 spatial regions;

dividing the second diff region into 4 equal parts along the sum axis and again into 4 equal parts along the hue axis so as to provide 16 spatial regions;

dividing the third diff region into 4 equal parts along the sum axis and again into 4 equal parts along the hue axis so as to provide 16 spatial regions;

dividing the fourth diff region into 2 equal parts along the sum axis and again into 8 equal parts along the hue axis so as to provide 16 spatial regions; and

dividing the fifth diff region into 8 equal parts along the hue axis so as to provide 8 spatial regions.

9. (Previously Presented) The method of claim 1, wherein the diff values range from 0 to 255, and diff values 6, 60, and 110 are preselected to divide the color space along the diff

axis, such that the color space is divided into 4 diff regions based on the preselected diff values, wherein the color space is divided into 32 spatial regions by:

dividing the lowest or first diff region into 8 equal parts along the sum axis so as to provide 8 spatial regions;

dividing the second diff region into 4 equal parts along the sum axis and again into 4 equal parts along the hue axis so as to provide 16 spatial regions;

dividing the third diff region into 4 equal parts along the hue axis so as to provide 4 spatial regions; and

dividing the fourth diff region into 4 equal parts along the hue axis so as to provide 4 spatial regions.

10. (Previously Presented) The method of claim 1, wherein the diff values range from 0 to 255, and diff values 9, 29, and 75 are preselected to divide the color space along the diff axis such that the color space is divided into 4 diff regions based on the preselected diff values, wherein the color space is divided into 32 spatial regions by:

dividing the lowest or first diff region into 8 equal parts along the sum axis so as to provide 8 spatial regions;

dividing the second diff region into 2 equal parts along the sum axis and 4 equal parts again along the hue axis so as to be provide 8 spatial regions;

dividing the third diff region into 4 equal parts along the sum axis and into 3 equal parts along the hue axis so as to provide 12 spatial regions; and

dividing the fourth diff region into 2 equal parts along the sum axis and 2 equal parts along the hue axis so as to provide 4 spatial regions.

11. (Previously Presented) The method of claim 1, wherein the diff values range from 0 to 255, and diff values 9, 29, and 75 are preselected to divide the color space along the diff axis, such that the color space is divided into 4 diff regions based on the preselected diff values, wherein the color space is divided into 64 spatial regions by:

dividing the lowest or first diff region into 8 equal parts along the sum axis so as to provide 8 spatial regions;

dividing the second diff region into 4 equal parts along the sum axis and 4 equal parts along the hue axis so as to provide 16 spatial regions;

dividing the third diff region into 4 equal parts along the sum axis and 6 equal parts along the hue so as to provide 24 spatial regions; and

dividing the fourth diff region into 4 equal parts along the sum axis and 4 equal parts along the hue axis so as to provide 16 spatial regions.

12. (Previously Presented) The method of claim 1, wherein the diff values range from 0 to 255, and diff values 9, 29, and 75 are preselected to divide the color space along the diff

axis, and the color space is divided into 4 diff regions based on the preselected diff values, wherein the color space is divided into 120 spatial regions by:

dividing the lowest or first diff region into 8 equal parts along the sum axis so as to provide 8 spatial regions;

dividing the second diff region into 4 equal parts along the sum axis and into 4 equal parts along the hue axis so as to provide 16 spatial regions;

dividing the third diff region into 4 equal parts along the sum axis and 12 equal parts along the hue axis so as to provide 48 spatial regions; and

dividing the fourth diff region into 4 equal parts along the sum axis and 12 equal parts along the hue axis so as to provide 48 spatial regions.

13. (Previously Presented) The method of claim 1, wherein the diff values range from 0 to 255, and diff values 9, 29, 75, and 200 are preselected to divide the color space along the diff axis such that the color space is divided into 5 diff regions based on the preselected diff values, wherein the color space is divided into 184 spatial regions by:

dividing the lowest or first diff region into 8 equal parts along the sum axis so as to provide 8 spatial regions;

dividing the second diff region into 4 equal parts along the sum axis and 8 equal parts along the hue axis so as to provide 32 spatial regions;

dividing the third diff region into 4 equal parts along the sum axis and 12 equal parts along the hue axis so as to provide 48 spatial regions;

dividing the fourth diff region into 4 equal parts along the sum axis and 12 equal parts along the hue axis so as to provide 48 spatial regions; and

dividing the fifth diff region into 2 equal parts along the sum axis and 24 equal parts along the hue axis so as to provide 48 spatial regions.

14. (Currently Amended) A color quantization method based on the HMMD color space, comprising:

dividing the color space into a plurality ~~of differential values corresponding to~~ diff regions along a diff axis; and

dividing each of the diff regions into 2^x equal parts along a sum axis and dividing each of 2^x equal parts into 2^y equal parts along a hue axis, wherein x and y are integers.

15. (Previously Presented) The method of claim 14, wherein the diff values range from 0 to 255 for a color quantization level of 256 after division, and diff values 6, 20, 60, and 110 are preselected to divide the color space into the plurality of diff regions such that the color space is divided into 5 diff regions, wherein the color space is divided into 256 spatial regions by:

dividing the lowest or first diff region into 32 equal parts along the sum axis so as to provide 32 spatial regions;

dividing the second diff region into 8 equal parts along the sum axis and 4 equal parts along the hue axis so as to provide 32 spatial regions;

dividing the third diff region into 4 equal parts along the sum axis and 16 equal parts along the hue axis so as to provide 64 spatial regions;

dividing the fourth diff region into 4 equal parts along the sum axis and 16 equal parts along the hue axis so as to provide 64 spatial regions; and

dividing the fifth diff region into 4 equal parts along the sum axis and 16 equal parts along the hue axis so as to provide 64 spatial regions.

16. (Previously Presented) The method of claim 14, the diff values range from 0 to 255 for a color quantization level of 128 after division, and diff values 6, 20, 60, and 110 are preselected to divide the color space such that the color space is divided into 5 diff regions, wherein the color space is divided into 128 spatial regions by:

dividing the lowest or first diff region into 16 equal parts along the sum axis so as to provide 16 spatial regions;

dividing the second diff region into 4 equal parts along the sum axis and 4 equal parts along the hue axis so as to provide 16 spatial regions;

dividing the third diff region into 4 equal parts along the sum axis and 8 equal parts along the hue axis so as to provide 32 spatial regions;

dividing the fourth diff region into 4 equal parts along the sum axis and 8 equal parts along the hue axis so as to provide 32 spatial regions; and

dividing the fifth diff region into 4 equal parts along the sum axis and 8 equal parts along the hue axis so as to provide 32 spatial regions.

17. (Previously Presented) The method of claim 14, wherein the diff values range from 0 to 255 for a color quantization level of 64 after division, diff values 6, 20, 60, and 110 are preselected to divide the color space such that the color space is divided into 5 diff regions wherein the color space is divided into 64 spatial regions by:

dividing the lowest or first diff region into 8 equal parts along the sum axis so as to provide 8 spatial regions;

dividing the second diff region into 4 equal parts along the sum axis and 4 equal parts along the hue axis so as to provide 16 spatial regions;

dividing the third diff region into 4 equal parts along the sum axis and 4 equal parts along the hue axis so as to provide 16 spatial regions;

dividing the fourth diff region into 2 equal parts along the sum axis and 8 equal parts along the hue axis so as to provide 16 spatial regions; and

dividing the fifth diff region into 8 equal parts along the hue axis so as to provide 8 spatial regions.

18. (Previously Presented) The method of claim 14, wherein the diff values range from 0 to 255 for a color quantization level of 32 after division, and diff values 6, 60, and 110 are preselected to divide the color space such that the color space is divided into 4 diff regions wherein the color space is divided into 32 spatial regions by:

dividing the lowest or first diff region into 8 equal parts along the sum axis so as to provide 8 spatial regions;

dividing the second diff region into 4 equal parts along the sum axis and 4 equal parts along the hue axis so as to provide 16 spatial regions;

dividing the third diff region into 4 equal parts along the hue axis so as to provide 4 spatial regions; and

dividing the fourth diff region into 4 equal parts along the hue axis so as to provide 4 spatial regions.

Claims 19-40. (Canceled)

41. (Previously Presented) A method of describing a color image using HMMD color space, comprising:

describing a color image using one of 256, 128, and 64 bins by:

quantizing the HMMD color space into five subspaces using the diff axis of the HMMD color space, wherein the diff axis intervals are defined by points:

[0,6], [6,20], [20,60], [60,110], and [110,255]; and

uniformly quantizing each subspace along the hue and sum axes of the HMMD color space.

42-43. (Canceled)